

at intervals to clusters of two to five suberect branchlets, and their distal extremities are arcuate, 3 to 3·5 centim. long, and divided into branchlets, which, like the more central ones, are 2 to 3 centim. long and scarcely 5 millim. thick; apices 6 to 7 millim. apart. Upper surface of the main branches and base of the branchlets provided with numerous large immersed corallites, with an aperture of 1 millim. Apical corallites about 2 millim. diameter, usually about 1 millim. exsert. Lateral corallites ascending, elongate, labellate, and imbricate, 3 to 4 millim. long and 1·5 millim. thick, apices more or less pointed. Corallum very porous and reticulate in section, surface densely echinulate; wall thin, finely striato-reticulate and echinulate, except in the case of the younger ones. Star not recognizable in the prominent corallites; in the immersed ones it consists of six very narrow septa.

Two specimens have the apices of some of the branchlets subdivided; in a third the majority are proliferous and some of the apical corallites rather over 2 millim. in diameter.

Mauritius.

LV.—*Contributions towards a General History of the Marine Polyzoa, 1880–91.—Appendix.* By the Rev. THOMAS HINCKS, B.A., F.R.S.

[Continued from p. 176.]

‘Annals,’ July 1881 (p. 55 sep.).

Hiantopora ferox, MacGillivray.

In a previous paragraph I have pointed out that this form cannot be referred to *Cribrilina*, from which genus it has been rightly separated by MacGillivray. Since it was written I have seen Mr. Kirkpatrick’s Report on the Polyzoa from Torres Straits collected by Professor Haddon*, in which he ranks *Hiantopora ferox* as a variety of *Membranipora radicifera*, Hincks. The connexion between these two very dissimilar species he supposes to be established by the discovery of a variety of *M. radicifera*, to which he has given the name *intermedia*. Granting that the latter is, as Mr. Kirkpatrick supposes, a variety of *M. radicifera*, the further development and fusion of its spinous processes may have originated a form bearing a general resemblance to *H. ferox*. Beyond this, I confess, I am not prepared to go. Mr. Kirkpatrick goes much further; he assumes that

* ‘Scientific Proceedings of the Royal Dublin Society,’ vol. vi. part 10.

Hiantopora ferox is the product of such a process*; and though in the course of its development it has emerged from the Membraniporine ranks and taken a higher morphological place, he proposes to leave it at the point from which it started, and to unite under one specific name forms which in fact are widely separated by essential differences.

It must be borne in mind that we cannot say with absolute certainty that *H. ferox* has been developed from the particular species *Membranipora radicifera* and in the special way indicated; this is merely conjectural. But if we could, the evolution has resulted in a distinctive and higher grade of organization, a new type of structure, which it is the function of a rational classification to recognize and to mark.

The differences between *Hiantopora* and *Membranipora* are striking and significant. The membranous front wall of the latter, wholly unprotected, or in some cases partially protected by a thin lamina, in others by marginal spines, is arched over in the former by a strong calcareous covering, allowing of various important structural modifications and affecting materially the conditions of life. Granting that the evolution of *Hiantopora* has proceeded as Mr. Kirkpatrick supposes, it is now far from being a mere "variety" of *Membranipora radicifera*; it is this *plus* the morphological changes which have been gradually effected according to evolutionary laws. It has lost the characteristic features of the Membraniporine structure, and in any system which aims at exhibiting the natural scheme of life-development it must be placed apart to represent the morphological advance and stand as an evolutionary landmark.

Ibid. (p. 56 sep.).

Cribrilina speciosa, sp. n.

Busk identifies this species (doubtfully) with his *C. philomela* ('Challenger' Report, p. 132, pl. xvii. fig. 6); but there can be little doubt that the two forms are distinct. They differ in the shape of the cell and of the orifice, which is suborbicular in *C. speciosa*. In the latter the costate area does not occupy the whole of the front, as in *C. philomela*, but is surrounded by a smooth border of cell-wall; the intercostal furrows are destitute of pores, and the area is traversed by a prominent central keel. There are also differences between the oöcia of the two forms.

* "In the latter (*H. ferox*) the spines have undergone further development; the horizontal portion on the avicularian side of the cells has grown over the whole area, and fused with the opposite cell-margin" (*loc. cit.* p. 616).

Busk also describes under his *C. philomela* a variety (*adnata*)*, leaving it doubtful whether it is referable to this species, or to *C. figularis*. It is certainly allied to the latter, but is distinct from it. It has no claim to be associated with *C. philomela*, but should rank as a separate species.

Ibid. (p. 57 sep.).

Cribrilina monoceros, MacGillivray.

This species is certainly not a *Cribrilina*, as Jullien has already remarked; it wants the Cribiline structure of the front wall. He refers it to a new genus (*Arachnopusia*), which he makes the type of a family group†.

The following is his diagnosis:—

Family *Arachnopusidæ*, Jullien.

“Orifice trapézoïdal; frontale perforée par des pores disposés irrégulièrement, aux lieu et place desquels on ne peut distinguer d’origelles sur les exemplaires décalcifiés et teints au picro-carminate d’ammoniaque; opercule pellucide, très mince, très difficile à voir, d’une existence douteuse. Ancestrule membraniporoïde épineuse.”

Genus *ARACHNOPUSIA*, Jullien.

“Orifice trapézoïdal, dont les deux lèvres sont droites ou presque droites; sur chacun des côtés du trapèze que forme l’orifice existe soit une épine articulée, assez épaisse et creuse, soit un avicellaire plus ou moins facile à voir; ancestrule membraniporoïde à bord libre garni d’épines.

“Par l’ancestrule ce genre se rapproche des *Mucronella* de Th. Hincks.”

Upon this I may remark that the characters adduced as the basis of the family are clearly insufficient and wanting in significance. The orifice is by no means “trapezoidal” as a rule; it is usually arched above and straight or nearly so below. The absence of “origelles” in connexion with the pores, which are thickly distributed over the front wall, the tenuity and transparency of the operculum, and the structure of the primary cell (“ancestrule”) are the only remaining characters. The last-named is not distinctive, but is common to many widely differing genera (*Microporella*, *Schizoporella*, *Mucronella*, &c.). We know too little as yet of the nature

* ‘Challenger’ Report, pl. xxii. fig. 7.

† ‘Cap Horn,’ p. 62, pl. iii. figs. 8, 9.

and function of the *origellæ* * to assign to them the high systematic value which is here claimed for them. The tenuity of the operculum is shared by many other forms, and is not in itself of any special importance.

Apart from these family characters, in which of course it participates, the genus *Arachnopusia* rests on a single peculiarity, the presence of a tall articulated spine (sometimes replaced by an avicularium) on each side of the orifice, a character of merely specific value.

I should be inclined to place *Lepralia monoceros*, Busk, in the same group as *Hiantopora ferox* (see note 2, p. 472).

Additional Localities. Elizabeth Island, Straits of Magellan, 6 fath.; Tom Bay, near Madre de Dios Archipelago (teste *Stuart O. Ridley*): Port Jackson, 35 fath.; off Marion Island; Tierra del Fuego; coasts of Patagonia; Cape Horn; north of Van Diemen's Land; Crozet Islands; Pacific Ocean, 3125 fath. (*Busk*).

Ibid. (p. 58 sep.).

Microporella mucronata, MacGillivray.

This species proves to be identical with the *Eschara coscinophora* of Reuss (Wien. Tertiär. 67), and his name must therefore supersede MacGillivray's. In conformity with views which I have stated elsewhere †, I should refer this and kindred forms to the genus *Adeona*, Lamx., and to the subsection of it which includes species destitute of the flexible stem.

Ibid. (p. 58 sep.).

MONOPORELLA, gen. nov.

The name *Haploporella* having been previously employed, the above has been substituted for it ('Annals,' ser. 5, vol. viii. p. 135, note 2) (p. 78 sep.).

Ibid. (p. 59 sep.).

Monoporella lepida, sp. n.

Waters in the first instance identified this species with *Membranipora perforata*, MacG., but subsequently admitted

* "Des bourgeons charnus développés sur l'endocyste; elles sécrètent du calcaire sur leur pourtour seulement, en produisant des pores plus ou moins réguliers sur le bord des zoécies" (Jullien, Bull. Soc. Zool. de France, t. xi., 1886).

† See "Critical Notes on the Polyzoa," Ann. & Mag. Nat. Hist. ser. 5, vol. xix. p. 150.

its specific distinctness, and placed it in the genus *Micropora* *. It may be well to note some of the principal differences between the two forms:—i. There are important differences in the orifice; that of *M. perforata* is very inferior in size, arched above and perfectly straight below, and very narrow between the upper and lower margins; it is also much raised above the front wall. That of *M. lepida* is more than twice as large; the angles at the junction of the sides with the inferior margin, so marked in the other form, have disappeared, and the orifice is almost subelliptical.

ii. In MacGillivray's species the cell tapers off abruptly to the top, which is much narrower and more pointed than in *M. lepida*, and the raised margin is only carried to the base of the orifice, which stands out prominently at the apex of the cell, whilst in *M. lepida* it is carried to the top of the orifice and encloses it. Indeed there is a striking contrast between the zoecia of the two species in size, form, and general character.

iii. In *M. perforata* the avicularia are small and placed at the top of the cells immediately above the orifice on a slight elevation, and are furnished with a triangular mandible. In *M. lepida* they are scattered amongst the zoecia and occupy a distinct area of considerable size; they are comparatively large; the beak is broad below, where there are two strong denticular processes on which the mandible works, and tapers upward, curving slightly to one side; the mandible I have not seen, but there can be little doubt that it is elongate, tapering, and pointed.

iv. It may be added that in *M. perforata* there is a stout spine on the side of the orifice above, which is wanting in *M. lepida*, and that the ovicells, judging from MacGillivray's figure, differ in shape. That of the last-named species is small and globose.

Not only are these forms undoubtedly distinct specifically, but I am by no means satisfied that they belong to the same genus. *Membranipora perforata*, MacG., is a characteristic *Micropora*; but *Monoporella lepida* has several features which serve to indicate its affinity with the Microporellidæ. The termination of the cell-margin at the base of the orifice, leaving it free and truly "apical" †, is, so far as I know, a

* "Bryozoa from Bairnsdale," Quart. Journ. Geol. Soc., Nov. 1882. Referring to the two forms he says, "I think they must not only be united generically, but can only rank as specific varieties." See also "Tertiary Chilostomatous Bryozoa from New Zealand," Quart. Journ. Geol. Soc., Feb. 1887.

† See Busk's diagnosis of the genus *Micropora*, 'Challenger' Report, p. 70.

characteristic feature of the genus *Micropora*; the depressed lamina, overspread by a membranous covering (at least in the living state), and the suboral foramina or fissures are also characteristic features; and they seem to be all of them wanting in *M. lepida*. In the latter the cell-margin extends to the top of the orifice and closes it in; the front wall is convex, though only slightly; there is no trace of an outer membranous wall, while the lateral perforations or pores cannot be placed in the same category with the suboral "opening" or fissure amongst the Microporidæ. They are evidently of exactly the same character as the punctures, which are so commonly present along the margin of the cell. Commonly there are three on each side in *M. lepida*, of which the uppermost is frequently the largest, but by no means universally. Sometimes those on one side are of much the same size, sometimes the uppermost is smaller than the rest. They are circular or subcircular in form. The Microporidan suboral foramen is usually close under the lower margin of the orifice on each side, and so it is in the only specimen of *M. perforata* which I have had the opportunity of examining. On the whole I am inclined to think at present that *M. lepida* should rank amongst the Microporellidæ; but without the opportunity of studying a larger range of specimens it would be unwise to come to an absolute decision.

Ibid. (p. 60 sep.).

Porina (Eschara) gracilis, Lamx.

Lamouroux's specific name has been set aside by Waters in favour of *coronata*, Reuss (Wien. Tert. 62). There seems to be no sufficient ground for the change, which in itself is undesirable. Lamouroux's diagnosis may be imperfect, but Lamarek, Milne-Edwards, Busk (B. M. Cat. and Chall. Rep.), MacGillivray (Vict. Pol.), and others have identified his species and adopted his name. A designation so generally adopted, and by such eminent authorities, should not be lightly displaced. Waters himself has suggested* that Milne-Edwards, who has given a fuller description than Lamouroux, should be joined with him, as authority for the name. Such a course (if needful) would certainly be preferable to its suppression.

Ibid. (p. 60 sep.).

Schizoporella triangula, sp. n.

Busk, in his description of this species ('Challenger'

* "Australian Bryozoa," 'Annals' for September 1887, p. 189.

Report, p. 167), mentions a small avicularium, with an acute triangular mandible close to the orifice, which is not included in my diagnosis.

Additional Locality. "Off Heard Island, 70 fath., volcanic mud."

Ibid. (p. 64 sep.).

Schizoporella tumida, sp. n.

This species is one of a group of allied forms which are all distinguished by the possession of an aviculiferous suboral swelling, differing in size and shape, but the same in general character. They are *S. Ridleyi*, MacG., *Escharina simplex*, D'Orb., *Esch. Edwardsiana*, D'Orb., and the present species. I was at first inclined to identify *S. Ridleyi* with *Escharina simplex*, D'Orb.; but Mr. Quelch, who had the opportunity of examining the type specimens of the former, has arrived at a different conclusion, and as my knowledge of them is derived entirely from figures and descriptions, I readily accept his decision. They are clearly very nearly related. *S. tumida* has much in common with D'Orbigny's species, but there is a marked difference in the form of the mouth and the character of the suboral swelling, which is of ampler size and more regular shape, forming a thick rounded collar round the front and sides of the orifice. This species is also furnished with another form of avicularium (in addition to the suboral form) borne on a large ovate rising on the surface of the cell which lies alongside the orifice and extends for some distance downwards.

It is also remarkable for its perfectly smooth surface.

Escharina Edwardsiana, D'Orb., is another species with the same general character of orifice and suboral region, but exhibiting some minor differences.

These species represent to all appearance slight modifications of one and the same type.

Ibid. (p. 62 sep.).

Schizoporella acuminata, sp. n.

The acuminate extension of the cell above in this species appears not to be so permanent a character as I had supposed. Mr. Waters has obtained *S. acuminata* from the Australian Tertiaries, and finds that this is not a constant character in fossil specimens. "Some cells," he says, "are acuminate, while others are round, and I have specimens from Bairns-Ann. & Mag. N. Hist. Ser. 6. Vol. viii.

dale (Gippsland) in which none of the cells are acuminate." (Quart Journ. Geol. Soc., Aug. 1882.)

'Annals,' August 1881 (p. 65 sep.).

Mucronella porosa, sp. n.

This species must, I think, be considered a form of MacGillivray's *M. Ellerii*, as Mr. Waters has suggested*, though there are striking differences between them. The most remarkable feature of *M. Ellerii* is the line of spinous processes with rounded heads situated on the peristome, which is much elevated. These are entirely absent in *M. porosa*, and the peristome is not raised; consequently the general aspect of the zoarium in the two forms is strangely dissimilar. As a result probably of the elevated spinous peristome in *M. Ellerii* the massive central mucro is not developed, and the large avicularium occupies a place some way down within the lower margin. The surface of the cell is more or less covered with nodules distributed amongst the pores.

M. porosa is much simpler in character. There is a total absence of the spinous processes; the centre of the lower margin bears a massive mucro, much swollen at the base, on one side of which, turned slightly inward, is placed the avicularium, with a broad rounded mandible. Large spatulate scattered avicularia are present at times on both forms. In a specimen from Singapore or the Philippines numerous smaller avicularia, elevated above the surface and resembling the oral form, are distributed over the cells.

The cells in *M. Ellerii* are suberect. The small rounded avicularium on the margin at one side of the mucro is characteristic of *M. porosa*. The latter may stand as *M. Ellerii*, form *porosa*.

M. vultur†, which Mr. Waters would also refer to *M. Ellerii*, is, I think, entitled to specific rank. Its remarkably large cells, decumbent, not suberect or oblique like those of *M. Ellerii*, its exceptionally massive mucro, its large avicularium, with its elongate, finely pointed mandible bent abruptly inward at the top, its large, articulated, oral spines, form a group of distinctive characters. The cells of *M. vultur* differ not only in size but in general character from those of *M. Ellerii* and its form *porosa*.

* "Australian Bryozoa," 'Annals' for September 1887, p. 194.

† "Contributions" &c., p. 98 (sep.).